

LISTING OF CLAIMS:

Claims 1-60 (Canceled).

Claim 61. (Currently amended) An apparatus for evaluating catalytic performance of members of a catalyst library, the apparatus comprising

a reaction vessel assembly comprising a plurality of reaction vessels adapted for receiving catalyst library members, each of the plurality of vessels having an inlet and an outlet;

a fluid handling system for providing fluid flow simultaneously through the plurality of vessels; and

a detector for analyzing vessel effluent,

the fluid handling system comprising an entrance control volume in fluid communication with the inlet of each of the plurality of vessels, a plurality of passive flow restrictors, and an exit control volume in fluid communication with the outlet of each of the plurality of vessels, each of the plurality of flow restrictors being arranged upstream of one of the plurality of vessels such that each of the plurality of flow restrictors provides fluid communication between one of the plurality of vessels and the entrance control volume, and wherein maintaining a pressure in the entrance control volume higher than in the exit control volume results in fluid flow through the vessels,

the flow restrictors being adapted such that the resistance to fluid flow is greatest in the flow restrictors and the resistance to fluid flow in each of the flow restrictors is approximately the same so that fluid flow through the vessels is apportioned approximately equally between each of the plurality of vessels.

Claim 62. (Currently amended) An apparatus for evaluating catalytic performance of members of a catalyst library, the apparatus comprising

a reaction vessel assembly comprising a plurality of reaction vessels adapted for receiving catalyst library members, each of the plurality of vessels having an inlet and an outlet;

a fluid handling system for providing fluid flow simultaneously through the plurality of vessels; and

a detector for analyzing vessel effluent,

the fluid handling system comprising an entrance control volume in fluid communication with the inlet of each of the plurality of vessels, a plurality of flow restrictors, and an exit control volume in fluid communication with the outlet of each of the plurality of vessels, each of the plurality of flow restrictors being ~~one of capillary tubes, or micromachined channels and being arranged upstream or downstream of one of the plurality of vessels, and wherein each of the plurality of flow restrictors provides~~ in fluid communication between with

one of the plurality of vessels ~~and the entrance control volume or the exit control volume~~, and wherein maintaining a pressure in the entrance control volume higher than in the exit control volume results in fluid flow through the vessels,

the flow restrictors being adapted such that the resistance to fluid flow is greatest in the flow restrictors and the resistance to fluid flow in each of the flow restrictors is approximately the same so that fluid flow through the vessels is apportioned approximately equally between each of the plurality of vessels.

Claim 63. (Currently amended) An apparatus for evaluating catalytic performance of members of a catalyst library, the apparatus comprising

a reaction vessel assembly comprising a plurality of reaction vessels adapted for receiving catalyst library members, each of the plurality of vessels having an inlet and an outlet;

a fluid handling system for providing fluid flow simultaneously through the plurality of vessels; and

a detector for simultaneously analyzing vessel effluents of at least two of the plurality of vessels,

the fluid handling system comprising an entrance control volume in fluid communication with the inlet of each of the plurality of vessels, a plurality of passive

flow restrictors, and an exit control volume in fluid communication with the outlet of each of the plurality of vessels, each of the plurality of flow restrictors being ~~arranged upstream or downstream of one of the plurality of vessels, and wherein each of the plurality of flow restrictors provides~~ in fluid communication ~~between with~~ one of the plurality of vessels ~~and the entrance control volume or the exit control volume~~, and wherein maintaining a pressure in the entrance control volume higher than in the exit control volume results in fluid flow through the vessels,

the flow restrictors being adapted such that the resistance to fluid flow is greatest in the flow restrictors and the resistance to fluid flow in each of the flow restrictors is approximately the same so that fluid flow through the vessels is apportioned approximately equally between each of the plurality of vessels.

Claim 64. (Previously presented) The apparatus of claims 61 or 62 further comprising a sampling probe selectively positionable to sample vessel effluent and adapted to transport the sampled fluid to the detector.

Claim 65. (Previously presented) The apparatus of claim 63 further comprising sampling probes positionable to simultaneously sample vessel effluents of the at least two of the plurality of vessels and adapted to transport the sampled fluids to the detector for simultaneous analysis.

Claim 66. (Previously presented) The apparatus of claims 61 or 62 wherein the fluid handling system further comprises a selection valve providing selective fluid communication between the outlet of a selected vessel and the detector, such that a test fluid can be sequentially directed from the selected vessel to the detector.

Claim 67. (Previously presented) The apparatus of claims 61 or 62 wherein the fluid handling system further comprises

a plurality of outlet conduits and a selection valve, the outlet conduits providing fluid communication between the outlet of each of the plurality of vessels and the selection valve,

a sample bypass and a sampling valve, the sample bypass providing fluid communication between the selection valve and the sampling valve, and

a return line providing fluid communication between the sampling valve and the exit control volume,

the selection valve being adapted to divert fluid from a selected vessel to the sample bypass while allowing fluid from non-selected vessels to flow to the exit control volume,

the sampling valve being adapted to provide selective fluid communication between the sample bypass and the

return line, and between the sample bypass and the detector.

Claim 68. (Previously presented) The apparatus of claim 62 wherein the fluid handling system further comprises a fluid distribution valve providing selective fluid communication between the entrance control volume and the inlet of a selected vessel, such that a test fluid can be sequentially directed into the selected vessel.

Claim 69. (Previously presented) The apparatus of claim 68, wherein the fluid handling system further comprises a selection valve providing selective fluid communication between a selected vessel and the detector, such that a test fluid can be sequentially directed from the selected vessel to the detector.

Claim 70. (Previously presented) The apparatus of any of claims 61, 62 or 63 wherein the assembly of reaction vessels comprises a base block and a cover block removably attached to the base block.

Claim 71. (Previously presented) The apparatus of claim 70 wherein the base block includes a top surface having a plurality of wells formed thereon, the cover block includes a bottom surface disposed on the top surface of the base block and having a plurality of depressions formed thereon, each of the plurality of depressions being in substantial alignment with one of the wells, such that the aligned depressions and wells form cavities for containing the vessels.

Claim 72. (Previously presented) The apparatus of claim 70 wherein the assembly for containing the vessels further comprises inlet ports and outlet ports located on the bottom surface of the base block, each of the inlet ports providing fluid communication with the inlet of only one of the vessels, each of the outlet ports providing fluid communication with the outlet of only one of the vessels.

Claim 73. (Previously presented) The apparatus of claim 70 wherein the assembly for containing the vessels further comprises an inlet port located on the bottom surface of the base block, and outlet ports located on the top surface of the cover block, the inlet port providing fluid communication with an entrance control volume that provides fluid communication with the inlets of the vessels, each of the vessel outlet ports providing fluid communication with the outlet of only one of the vessels.

Claim 74. (Previously presented) The apparatus of any of claims 61, 62 or 63 further comprising a pressure regulator in the entrance control volume, or in both of the entrance control volume and the exit control volume.

Claim 75. (Previously presented) The apparatus of any of claims 61, 62 or 63 wherein the fluid handling system further comprises flow regulators.

Claim 76. (Currently amended) The apparatus of any of claims 62 or 63 wherein each of the plurality of flow

restrictors is arranged upstream of one of the plurality of vessels and provide fluid communication between the entrance control volume and one of the plurality of vessels.

Claim 77. (Canceled).

Claim 78. (Currently amended) The apparatus of ~~any of~~ claims 61[, 62] or 63 wherein the flow restrictors are capillary tubes.

Claim 79. (Canceled).

Claim 80. (Previously presented) The apparatus of any of claims 61, 62 or 63 wherein the fluid handling system is a gas handling system for providing gaseous flow simultaneously through the plurality of vessels.

Claim 81. (Previously presented) The apparatus of any of claims 61, 62 or 63 wherein the fluid handling system is a liquid handling system for providing liquid flow simultaneously through the plurality of vessels.

Claim 82. (Previously presented) The apparatus of any of claims 61, 62 or 63 further comprising a system for regulating the temperature of each of the plurality of vessels.

Claim 83. (Previously presented) The apparatus of any of claims 61, 62 or 63 wherein the detector is selected from the group consisting of a gas chromatograph, a mass



spectrometer, a visible spectrometer, an ultraviolet spectrometer and an infrared spectrometer.

Claim 84. (Previously presented) The apparatus of any of claims 61, 62 or 63 wherein the plurality of vessels comprises six vessels and the plurality of flow restrictors comprises six flow restrictors.

Claim 85. (Previously presented) The apparatus of any of claims 61, 62 or 63 wherein the plurality of vessels comprises forty-eight vessels and the plurality of flow restrictors comprises forty-eight flow restrictors.

Claim 86. (Previously presented) The apparatus of any of claims 61, 62 or 63 further comprising a catalyst in each of the plurality of vessels.

Claim 87. (Previously presented) The apparatus of any one of claims 61, 62 or 63 further comprising a different catalyst in each of the plurality of reaction vessels.

Claim 88. (Previously presented) The apparatus of any one of claims 61, 62 or 63 wherein the reaction vessels comprise fixed beds of different solid catalyst library members.